

What is claimed is:

1. A method for making a disc drive having an actuator system designed with an arm having first and second longitudinal edges, the method comprising steps of:

a) determining that the actuator is designed with a spring-mass structure

characterized by a first bending mode having a first natural resonant frequency and a second bending mode having a second natural resonant frequency;

b) modifying the arm so as to raise the first and second natural resonant frequencies, modifying step (b) further comprising a step of:

b1) providing a first stiffening element on the first longitudinal edge, the first stiffening element being configured to maximize a rise of the first natural resonant frequency while minimizing a rise of the second natural resonant frequency; and

c) assembling the designed actuator into the disc drive adjacent a first rotatable disc.

2. The method of claim 1 in which modifying step (b) further comprises a step of:

b2) providing a second stiffening element on the second longitudinal edge.

3. The method of claim 2 in which the first and second stiffening elements are identical.

4. The method of claim 1 in which the first stiffening element comprises a rail
extending along the first longitudinal edge.

5. The method of claim 1 in which the arm is generally planar and defines a first plane,
5 and in which the first stiffening element is generally planar and defines a second plane,
the second plane being generally orthogonal to the first plane.

6. The method of claim 1 in which the first stiffening element is integrally formed with
the arm.

7. The method of claim 1 in which the determining step (a) and the modifying step (b)
are performed upon a prototype of the designed actuator, in which assembling step (c)
further comprises steps of:

c1) copying the modified prototype to construct a production version of the

15 designed actuator that is similar to the modified prototype; and

c2) assembling the production version of the designed actuator into the disc
drive.

8. The method of claim 7 in which the stiffening element has a cross-section which is
20 asymmetric.

9. A method of preventing resonance in a disc drive actuator comprising an actuator arm having first and second longitudinal edges, the actuator further being characterized by first and second bending modes, the first bending mode being characterized by a first natural resonant frequency and the second bending mode being characterized by a second natural resonant frequency, the method comprising steps of:

- a) determining a likelihood that the actuator will become resonant in the first bending mode during drive operation;
- b) determining a likelihood that the actuator will become resonant in the second bending mode during drive operation; and
- c) modifying the arm so as to raise one of the natural resonant frequencies to a substantially greater degree than the other of the natural resonant frequencies.

10. The method of claim 9, in which modifying step (c) further comprises a step of:

- c1) providing a stiffening element on one of the longitudinal edges of the arm.

11. The method of claim 10 in which the stiffening element comprises a rail extending along the one longitudinal edge of the arm.

12. The method of claim 11 in which the stiffening element is integrally formed with the arm.

13. The method of claim 10 in which the modifying step (c) further comprises a step of:
- c2) providing a second stiffening element on the other of the longitudinal edges of the arm.

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14. The method of claim 13 in which the first and second stiffening elements are identical.

15. A method of making a disc drive, comprising steps of:

- a) a step for tuning a first natural resonant frequency of an actuator arm while minimizing change to a second natural resonant frequency of the arm; and
- b) assembling the actuator arm into the disc drive.

16. The method of claim 15 in which step (a) further comprises a step of:

- a1) modifying the arm so as to raise the first natural resonant frequency.

17. The method of claim 16 in which modifying step (a1) further comprises a step of:

- a1A) providing a stiffening element on a longitudinal edge of the arm.

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18. The method of claim 15 in which step (a) further comprises a step of:

- a1) providing a generally elongate stiffening element on the arm, the stiffening element having an asymmetric cross-section.

18. The method of claim 15 in which step (a) further comprises a step of:
a1) providing a generally elongate stiffening element on the arm, the stiffening element having an asymmetric cross-section.